

## GROUP 2: REAL TIME LOFT OPERATIONS

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All LOFT scenarios should be constructed so as to provide the highest degree of realism that is economically, technically, and operationally feasible. The more realistic the situation, the faster the crew will adjust their thinking and provide reactions which would be typical of a line-flight orientation. The goal is to produce crew performance which would be typical of a crew on an actual line flight, given the same set of circumstances that were developed during the scenario.

The briefing which is provided to the crew before entering the simulator for LOFT, the trip papers, the communications throughout the flight, the role played by the instructor, and so on, are important factors, crucial to the establishment and maintenance of a high degree of realism. Crews should have all manuals and other required equipment for a normal line-flight.

In reference to the instructor briefing, it is essential that the crew have a full and complete appreciation of the rules under which LOFT is conducted. However, this briefing should be done before initiation of the crews' planning for the flight. Once flight planning and preparation have started, routes which follow should be as near to the normal pattern as is possible given the physical limitations imposed by the use of simulation.

Flight planning should be completed in a manner which duplicates as nearly as possible the comparable process prior to a line flight, though an actual appearance in operations is not necessary. The weather sequences, the weight manifest, and the flight plan should all be constructed and provided to the crew with definite training objectives in mind such as maximum weight takeoff, the winter operational considerations, etc.

Adequate time must be provided for the crew to perform a normal complete preflight setup. If it is customary for the flight engineer to enter the cockpit before the captain and first officer, the same sequence should be followed. However, if necessary and in the interests of saving time, it might be possible to modify the scenario to provide shorter ground times such as those sometimes found on through flights, in which case, all crew members might normally enter the cockpit together. It is desirable to provide a planned departure time toward which all preparations can be directed.

All communications must be in the manner normally found on a line-flight, that is, via radio from outside the "airplane," via interphone, between crew members, or in the case of cabin to cockpit, via the normal aircraft equipment provided for this

purpose. All external communications such as ATC, ground crew, etc., must be credible and realistic. If supplemental, background radio conversation is utilized, it must be complimentary with all aspects of the LOFT flight with respect to weather, segments, etc. Our group discussed the use of background communications at considerable length, and there was not a unanimous feeling that this kind of background is necessary or even desirable. There are problems associated with unplanned diversions, things that really cannot be foreseen, in which case you would probably have to turn off the background. It must fit the flight precisely, and may also be very expensive to maintain. Normal company communications must also be included such as weight manifest check, departure reports, etc.

The instructor's role is that of a communicator and observer during the session, but to some extent he is also an evaluator. He is not an instructor in the traditional sense of that word. He is the manager of the flight, using appropriate radio calls or responses to direct the flight along the desired path. However, he must be prepared to accept and manage alternative courses of action that the crew may wish to pursue. The instructor should remain as unobtrusive as possible, within the physical limitations of the simulator. He must not instruct, he must not intrude into the crew discussions. He must allow their decisions to be carried out regardless of the consequences. Where feasible, automatic scenario running may be used, not as a replacement for the instructor, but as a means of unloading him and in the interest of standardization.

The simulator must be capable of performing the mission scenario which has been designed. If a required component for a scenario is inoperative, that LOFT scenario cannot be flown. However, if the inoperative component is not required for the planned scenario, and if it does not significantly detract from the crew's perception of a realistic cockpit environment, that LOFT training is not precluded. If an equipment failure occurs in-flight in a manner which could be duplicated in the airplane, the scenario can proceed to completion of that segment as a similar line-flight might continue, even though the scenario for that flight might then require some modification.

The use of simulator capabilities to provide replay, to be frozen, to be repositioned, etc., which is not consistent with a continuous, real-time operation, should not be permitted except for some long-range flight where cruise patterns may be altered by repositioning.

Regardless of the physical separation between the instructor and the crew, the instructor should be provided with a means to monitor conversations between all cockpit crew members.

When a simulator lacks realistic taxi capabilities, sufficient taxi time should be provided to allow for the completion of duties normally occurring during that interval of the flight.

Regardless of the direction a flight was intended to follow, crews might elect to follow a course of action that was not contemplated when the scenario was developed. The instructor has the option of permitting the selected action and supporting it with appropriate clearances, weather, etc., or alternatively, to prevent the selected action by providing adverse weather, closed airports, inoperative aids, etc. The latter course should be used with care since it is often preferable for the crew to be allowed to proceed as they elect.

When simulator equipment failures occur, causing deviations from the scenario, it is permissible to continue provided the flight can operate in a credible manner which would be possible on an actual flight.

The crew should consist of a normal line captain, first officer, and flight engineer when the latter is part of that airplane's normal operating crew. However, if possible, another line-qualified person may be substituted whenever the regularly scheduled crew member is not available.

ATC clearances, operational situations created by the scenario, and so on, should be straightforward, with no attempt at trickery.

Evaluation and assessment after a LOFT flight must ultimately be the responsibility of a qualified instructor, regardless of the recording capabilities which may be available on the simulator. To amplify, we feel that there is no replacement for the judgements of a real human.

The schedule, when provided to the pilot assigning him to training, should include a summary of all pertinent equipment required, the rules to be followed such as the instructor's role, and as nearly as possible, the routes to be used, including departure and arrival stations.

Any contemplated regulation by the FAA regarding LOFT, should recognize that there is more than one approach to the problem. We do not feel that there is only one right way.

#### Discussion

CAPTAIN SESSA: Would you just go over the section on the automatic insertion of problems?

CAPTAIN CAVANAGH: We said that the evaluation and assessment

after a LOFT flight must ultimately be the responsibility of a qualified instructor, regardless of automated scoring or recording which may be available on the simulator used.